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RECORDS OF PENNSYLVANIA FISHES

HENRY W. FOWLER

Two complete accounts of the fishes of Pennsylvania have appeared, one by Cope in 1881, and the other by Dr. Bean in 1892. The first of these is of a rather general nature, though based on the author's studies while collecting about the State, and the other is to a large extent little more than an elaborated compilation of the first. In view of the desideratum of definite records for the distribution of the different species in the various streams, lakes, etc., I have collected at a number of localities, and thus am able to offer nearly complete notes for some districts. This, and an examination of the fine collection of Pennsylvania fishes in the Academy of Natural Sciences of Philadelphia will complete my records. It may be understood that no species is here included unless known to me from the examination of a Pennsylvania specimen. Further exploration will undoubtedly extend the distribution of many species, besides resulting in the acquisition of some others not now known from within our limits.

The collections in the Academy embrace chiefly those made by E. D. Cope and J. H. Slack, together with others made by T. D. Keim, B. W. Griffiths, P. Lorrilliere, W. S. Sutch, S. P. G. Lindsay, D. McCadden, H. T. Wolff, Alfred Satterthwait, J. S. Witmer, W. Stone, and myself. In this connection the writer wishes to thank Mr. Wm. E. Meehan of the State Fish Commission for permission to collect fishes in Pennsylvania with nets.

PETROMYZONIDÆ

Petromyzon marinus Linnæus. LAMPREY.—Delaware River, in the Brandywine tributaries in the Delaware basin at Stock Grange, Chester Co. (W. Stone); at Holmesburg, Philadelphia Co., Cornwells, Bucks Co., Dingmans Ferry, Pike Co. (H. T. Wolff); apparently less frequent in the Delaware than formerly.

Ichthyomyzon concolor (Kirtland). SILVER LAMPREY.—Allegheny River at Port Allegany, McKean Co.

Lampetra wilderi Jordan and Evermann. BROOK LAMPREY.—Kiskiminitas River (E. D. Cope); Allegheny River at Port Allegany, McKean Co.; Susquehanna tributaries at Emporium, Cameron Co.

ACIPENSERIDÆ

Acipenser sturio Linnæus. STURGEON.—Delaware River at Holmesburg, Tacony, Bridesburg, and Torresdale, in Philadelphia Co., and Cornwells, Bristol, and Tullytown in Bucks Co. I have found it fairly abundant at times and seen some large examples.

POLYODONTIDÆ

Polyodon spathula (Walbaum). PADDLE FISH.—Reported as occurring occasionally in the Allegheny River below Corydon, Warren Co., which it has been known to ascend as far as Salamanca and Olean in Cattaraugus Co., N. Y.

PSALLISOSTOMATIDÆ

Psallisostomus osseus (Linnæus). GAR PIKE.—Small examples occur in the lower Delaware River as far as Morrisville, Bucks Co., and occasionally a large one is noted.

AMIIDÆ

Amia calva Linnæus. BOW FIN.—An example from Lake Erie, obtained by Dr. Watson, may have been taken within our limits.

GLOSSODONTIDÆ

Glossodon harengoides Rafinesque. MOON EYE.—Beaver River (E. D. Cope); Youghiogheny River (E. D. Cope).

CLUPEIDÆ

Pomolobus pseudoharengus (Wilson). ALEWIFE.—Delaware River at Tinicum, Delaware Co., Holmesburg, Tacony, and Torresdale, Philadelphia Co., and Cornwells, Croydon, Bristol, Tullytown, and Morrisville, Bucks Co. Abundant in the spring.

Alosa sapidissima (Wilson). SHAD.— Delaware River at Tini-cum, Delaware Co., League Island, Frankford, Tacony, Holmes-burg, and Torresdale, Philadelphia Co., Cornwells, Eddington, Croydon, Bristol, Tullytown, and Morrisville, Bucks Co., and Dingmans Ferry, Pike Co. (H. T. Wolff). Some seasons more abundant than others. In the Susquehanna they are taken about Peach Bottom and McCall's Ferry, Lancaster Co.

DOROSOMATIDÆ

Dorosoma cepedianum (Le Sueur). MUD SHAD.— Delaware River at Torresdale, Philadelphia Co. (Dr. H. D. Senior), and Cornwells, Bristol, and Tullytown, Bucks Co. Apparently less abundant than formerly, though even in midwinter a few have been hauled out of the mud.

ENGRAULIDIDÆ

Anchovia mitchilli (Valenciennes). ANCHOVY.— Many exam-ples were obtained many years ago below Philadelphia, some most likely within our limits, by Dr. Colin Arrott. They occur in the lower Delaware and are more a feature of the marine fauna.

SALMONIDÆ

Salvelinus fontinalis (Mitchill). BROOK TROUT.— Brandywine tributaries in Chester Co., and those of the Schuylkill near Port Kennedy, Montgomery Co. (D. McCadden), all in the Delaware basin; the Susquehanna basin in the Loyalsock near Lopez, Sullivan Co., and near Galeton, Potter Co.; the Allegheny basin above Port Allegheny in McKean Co., and Seven Bridges in Potter Co.; the Genesee basin about Gold in Potter Co.

ARGENTINIDÆ

Osmerus mordax (Mitchill). SMELT.— I have seen a number of examples taken from the Schuylkill and Delaware near Phila-delphia.

ANGUILLIDÆ

Anguilla chrisypa Rafinesque. EEL.— Delaware River at Tinicum and Darby Creek, Delaware Co., League Island, Frankford, Tacony, Holmesburg, Torresdale, with the Pennypack Creek basin at Bustleton, in Philadelphia Co.. Cornwells, Croydon, Bristol, Tullytown, and Morrisville, with the Neshaminy Creek basin at Hulmeville and Newtown, Bucks Co., and Dingmans Ferry, Pike Co. (H. T. Wolff); Susquehanna basin at Galetton, Potter Co. I did not meet with eels over the Allegheny divide in Potter and McKean Counties, and the impression is prevalent that they do not occur in the upper tributaries of either the Allegheny or the Genesee.

CYPRINIDÆ

Campostoma anomalum (Rafinesque). STONE ROLLER.— Allegheny River at Port Allegany, McKean Co., in June, 1906, where I found entirely tuberculated males; Kiskiminitas River (E. D. Cope).

Chrosomus erythrogaster eos (Cope). RED-BELLIED DACE.— Cotypes of *C. eos* Cope examined.

Hybognathus nuchalis Agassiz. SILVERY MINNOW.— Kiskiminitas River (E. D. Cope).

Hybognathus nuchalis regius (Girard). EASTERN SILVERY MINNOW.— Delaware River at Tacony, Holmesburg, and Torresdale, Philadelphia Co., and Cornwells and Bristol, also the Neshaminy Creek basin at Hulmeville and Neshaminy Falls, in Bucks Co. Many examples were examined.

Pimephales notatus (Rafinesque). BLUNT-NOSED MINNOW.— Kiskiminitas River (E. D. Cope) and the Allegheny River at Port Allegany, McKean Co., June, 1906.

Semotilus bullaris (Rafinesque). FALL FISH.— Delaware River basin in the Brandywine Creek basin at Kennett Square, Mendenhall, Willistown Barrens, and opposite Chadds Ford, Chester Co.; Darby Creek basin, Delaware Co.; Tacony, the Pennypack Creek basin at Holmesburg and Bustleton, the Poquessing Creek basin opposite Cornwells and Torresdale, Philadelphia

Co.; the Neshaminy Creek basin at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill Creek basin about Bristol, and Tullytown Creek basin about Tullytown, Bucks Co.; Delaware Water Gap, Monroe Co. (E. D. Cope); Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna basin I have it from the Northeast Creek at Nottingham, Chester Co., and the Conestoga Creek, Lancaster Co. (E. D. Cope).

Semotilus atromaculatus (Mitchill). CHUB. — Delaware River basin in the Brandywine Creek basin at Kennett Square, Mendenhall, and opposite Chadds Ford, Chester Co.; Cobb's Creek (E. D. Cope) and Darby Creek, Delaware Co.; Tacony Creek, the Pennypack Creek at Holmesburg and Bustleton, the Poquessing Creek at Torresdale and opposite Cornwells, Philadelphia Co.; the Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff). The Susquehanna basin in the Octoraro near Nottingham, Chester Co., and Muncy, Lycoming Co. Beaver River (E. D. Cope); Warren Co. (Dr. J. H. Slack); Kiskiminitas River (E. D. Cope); the Allegheny River at Raymonds, Potter Co. I have also found it in the headwaters of the Genesee around Gold, Potter Co.

Leuciscus vandoisulus Valenciennes. ROSY DACE. — Octoraro Creek, in the Susquehanna basin, near Nottingham, Chester Co.

Leuciscus elongatus (Kirtland). RED-SIDED DACE. — Allegheny River at Port Allegany, McKean Co., in June, 1906.

Brama crysoleucas (Mitchill). ROACH. — Delaware basin in the Brandywine Creek basin at Kennett Square, Mendenhall, and opposite Chadds Ford, Chester Co.; Tinicum and Darby Creek, Delaware Co.; Tacony Creek, the Pennypack at Holmesburg, and Bustleton, and the Poquessing at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Pennypack at Hatboro, Montgomery Co.; Daleville, Lackawanna Co.; Dingmans Ferry, Pike Co. (H. T. Wolff), and in the Susquehanna basin from the Loyalsock Creek near Lopez, Sullivan Co.

Notropis bifrenatus (Cope). BRIDLED MINNOW. — Delaware

River in the Brandywine at Chadds Ford, Delaware Co.; the Pennypack at Holmesburg and Bustleton in Philadelphia Co., and Hatboro in Montgomery Co.; the Poquessing at Cornwells, the Neshaminy at Croydon, Hulmeville, Neshaminy Falls, and Newtown, and Mill Creek at Bristol, Bucks Co. Abundant and rather local.

Notropis cayuga Meek. CAYUGA MINNOW.—I have already recorded the only example seen, which was taken near Port Allegany in 1904.

Notropis procne (Cope). SWALLOW MINNOW.—Cotypes of *Hybognathus procne* Cope examined. I have examples also from the Delaware basin taken in the Schuylkill (E. D. Cope) and the Pennypack Creek near Holmesburg, Philadelphia. A small minnow was taken on one occasion, which may be this species, in the headwaters of Northeast Creek, near Nottingham, Chester Co., in the Susquehanna basin.

Notropis hudsonius amarus (Girard). EASTERN GUDGEON.—Susquehanna basin at Paradise, Lancaster Co. (J. S. Witmer). Delaware basin in the Brandywine Creek at Chadds Ford, Delaware Co.; open river and Pennypack Creek at Holmesburg, and the Poquessing at Torresdale, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, and Neshaminy Falls, and Mill Creek at Bristol, Bucks Co. More abundant in the larger streams.

Notropis whipplii (Girard). SILVER FIN.—Youghiogheny River (E. D. Cope) and Kiskiminitas River (E. D. Cope).

Notropis whipplii analostanus (Girard). EASTERN SILVER FIN.—Delaware River basin in the Brandywine Creek at Chadds Ford, and Darby Creek, Delaware Co.; Wissahickon Creek near Barren Hill, and Pennypack Creek near Hatboro, Montgomery Co.; Tacony Creek, Pennypack at Holmesburg and Bustleton, and Poquessing Creek at Torresdale and opposite Cornwells, Philadelphia Co.; the Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, Frog Hollow, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff). It is also abundant in the Susquehanna basin where I received it from Paradise, Lancaster Co. (J. S. Witmer), and the Northeast Creek at Nottingham, Chester Co.

Notropis cornutus (Mitchill). RED FIN.—Delaware River basin in the Brandywine Creek at Kennett Square, Mendenhall, and opposite Chadds Ford, Chester Co.; Darby Creek and Ridley Creek near Willistown Barrens, Delaware Co.; Wissahickon Creek near Barren Hill, and the Pennypack at Hatboro, Montgomery Co.; Tacony Creek, Pennypack at Holmesburg and Bustleton, Poquessing Creek at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, Newtown, Frog Hollow, and Chalfont, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co. In the Susquehanna basin in Northeast Creek at Nottingham, Chester Co.; Conestoga Creek (E. D. Cope) and Paradise, Lancaster Co. (J. S. Witmer), and Meshoppen, Elk Co. (E. D. Cope). In the Allegheny from near Croydon, Warren Co., and it also occurs farther up. Kiskiminitas River (E. D. Cope).

Notropis chalybæus (Cope). IRON-COLORED MINNOW.—Neshaminy Creek near Newton, and Mill Creek, Bristol, both in the Delaware basin, Bucks Co.

Notropis atherinoides Rafinesque. EMERALD MINNOW.—Beaver River (E. D. Cope).

Notropis rubrifrons (Cope). ROSY-FACED MINNOW.—Cotypes of *Alburnus rubrifrons* Cope examined.

Notropis photogenis (Cope). WHITE-EYED MINNOW.—Cotypes of *Squalius photogenis* Cope examined.

Notropis photogenis amœnus (Abbott). ATTRACTIVE MINNOW.—Hulmeville, in the Neshaminy Creek, Bucks Co.

Ericymba buccata Cope. SILVER-MOUTHED MINNOW.—Cotypes of the species examined.

Rhinichthys cataractæ (Valenciennes). LONG-NOSED DACE.—Delaware River basin in the Brandywine tributaries near Kennett Square and Mendenhall, Chester Co. In the Susquehanna at Paradise, Lancaster Co. (J. S. Witmer). Beaver River (E. D. Cope).

Rhinichthys atronasus (Mitchill). BLACK-NOSED DACE.—Delaware River basin in the Brandywine Creek basin at Kennett Square, Mendenhall, opposite Chadds Ford, Chester Co.; Darby, Ridley, and Cobb's Creeks, Delaware Co.; Schuylkill River, Tacony Creek, Pennypack Creek at Holmesburg, and Bustleton,

and Poquessing Creek at Torresdale, and opposite Cornwells, Philadelphia Co.; Wisahickon Creek near Barren Hill and Pennypack at Hatboro, Montgomery Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, Frog Hollow, Chalfont, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff); Daleville, Lackawanna Co. In the Susquehanna basin it occurs in the Octoraro and Northeast Creeks near Nottingham, Chester Co.; Paradise in Lancaster Co. (J. S. Witmer); the Loyalsock Creek near Lopez, Sullivan Co., and Pine Creek at Galeton and above, Potter Co. In the Allegheny River it is abundant at Coudersport and Raymonds, Potter Co. Kiskiminitas River (E. D. Cope). Youghiogheny River (E. D. Cope). Genesee basin near Gold, Potter Co. Potomac drainage of Fulton Co., (W. Stone).

Hybopsis kentuckiensis (Rafinesque). HORNED CHUB.—Susquehanna basin in Elk Creek, Chester Co. (E. D. Cope); Conestoga Creek, Lancaster Co. (E. D. Cope). Beaver River (E. D. Cope); Youghiogheny River (E. D. Cope); Kiskiminitas River (E. D. Cope); Warren Co. (Dr. J. H. Slack); Allegheny River at Port Allegany, McKean Co.

Exoglossum maxillingua (Le Sueur). CUT-LIPS MINNOW.—Allegheny River at Port Allegany, McKean Co.

CATOSTOMATIDÆ

Carpiodes cyprinus (Le Sueur). EASTERN CARP SUCKER.—Conestoga Creek, in the Susquehanna basin, Lancaster Co. (E. D. Cope).

Cycleptus elongatus (Le Sueur). BLACK HORSE.—Kiskiminitas River (E. D. Cope).

Catostomus commersonnii (Lacépède). COMMON SUCKER.—Delaware River in the Brandywine tributaries at Kennett Square, Mendenhall and opposite Chadds Ford, Chester Co.; Tinicum, Ridley, Cobb's and Darby Creeks, Delaware Co.; Pennypack Creek at Hatboro, Montgomery Co.; Tacony Creek, Pennypack Creek at Holmesburg and Bustleton, Poquessing Creek at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek

at Croydon, Hulmeville, Chalfont, Frog Hollow, Neshaminy Falls, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Delaware Water Gap, Monroe Co. (E. D. Cope); Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna basin in the Northeast and Octoraro Creeks near Nottingham, Chester Co.; Conestoga Creek (E. D. Cope) and Paradise, Lancaster Co. (J. S. Witmer). In the Allegheny River it occurs at Port Allegany in McKean Co.

Catostomus nigricans Le Sueur. BLACK SUCKER.—In the Susquehanna basin in the Conestoga Creek (J. Stauffer) and at Paradise, Lancaster Co. (J. S. Witmer); Octoraro Creek near Nottingham, Chester Co. Kiskiminitas River (E. D. Cope). I have not positively identified this from the Delaware basin.

Erimyzon sucetta oblongus (Mitchill). MULLET.—Delaware River basin in the Brandywine tributaries at Kennett Square and Mendenhall, Chester Co.; Brandywine at Chadds Ford, Ridley and Darby Creeks, Delaware Co.; Tacony Creek, river and Penny-pack Creek at Holmesburg and Bustleton, Poquessing Creek at Torresdale, and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co. In the Susquehanna basin from Center Co. (Dr. H. Allport). Genesee River at Gold, Potter Co.

Moxostoma anisurum (Rafinesque). WHITE-NOSED SUCKER.—Beaver River (E. D. Cope) and Youghiogheny River (E. D. Cope).

Moxostoma aureolum (Le Sueur). GOLDEN RED HORSE.—Beaver River (E. D. Cope) and Youghiogheny River (E. D. Cope).

Moxostoma macrolepidotum (Le Sueur). RED HORSE.—Conestoga Creek, Lancaster Co. (E. D. Cope).

Moxostoma breviceps (Cope). LONG-TAILED RED HORSE.—Type of *Ptychostomus breviceps* Cope examined.

Placopharynx duquesnii (Le Sueur). BIG-JAWED SUCKER.—Beaver River (E. D. Cope).

SILURIDÆ

Ictalurus punctatus (Rafinesque). BLUE CAT.—Beaver River (E. D. Cope).

Ameiurus catus (Linnæus). WHITE CAT.—Delaware River

basin in tributaries in Chester Co. (V. Bernard); Holmesburg and Torresdale, Philadelphia Co.; Bristol, Bucks Co.; Susquehanna River (E. D. Cope).

Ameiurus nebulosus (Le Sueur). YELLOW CAT.— Delaware River basin in the Brandywine tributaries at Kennett Square and Mendenhall, Chester Co.; Tinicum, Brandywine at Chadds Ford, Darby, Ridley, and Cobb's Creeks, Delaware Co.; Jenkintown, Montgomery Co. (H. Crawley); Falls of Schuylkill (Dr. Uhler), Tacony Creek, river and Pennypack at Holmesburg and Bustleton, Poquessing Creek at Torresdale, and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, Chalfont, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff); Susquehanna River (E. D. Cope); Northeast Creek near Nottingham, Chester Co.; Conestoga Creek, Lancaster Co. (E. D. Cope); Allegheny River at Coudersport and Perryville, Potter Co.

Gronias nigrilabris Cope. BLIND CAT.— Cotypes of the species examined.

Leptops olivaris (Rafinesque). MUD CAT.— Youghiogheny River (E. D. Cope).

Schilbeodes gyrinus (Mitchill). TADPOLE STONE CAT.— Delaware River at Holmesburg, Philadelphia Co.; Mill Creek at Bristol, and Tullytown, Bucks Co.; Delaware Water Gap, Monroe Co. (E. D. Cope); Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna from the Loyalsock Creek near Lopez, Sullivan Co. In the Genesee below Gold, Potter Co.

Schilbeodes insignis (Richardson). MARGINED STONE CAT.— Delaware River in the Schuylkill and at Holmesburg, Philadelphia Co.; Susquehanna basin at Carlisle, Cumberland Co. (S. F. Baird); Conestoga Creek (J. Stauffer) and Paradise, Lancaster Co. (J. S. Witmer).

ESOCIDÆ

Esox americanus (Gmelin). BANDED PICKEREL.— Delaware River basin in the Brandywine tributaries at Kennett Square and Mendenhall, Chester Co.; Tinicum and Darby Creek, Delaware Co.; Tacony Creek, Pennypack Creek at Holmesburg, and Poquessing Creek at Torresdale and opposite Cornwells, Philadel-

phia Co.; Neshaminy Creek at Neshaminy Falls and Newtown, Mill Creek at Bristol, Tullytown, and Morrisville, Bucks Co. In the Octoraro Creek of the Susquehanna basin near Nottingham, Chester Co.

Esox vermiculatus Le Sueur. WESTERN PICKEREL.—Allegheny River in Potter County.

Esox reticulatus Le Sueur. CHAIN PIKE.—Rock Hill Pond and Dingmans Ferry, in the Delaware Basin, Pike Co. (H. T. Wolff).

Esox lucius Linnæus. PIKE.—Although I did not secure any examples of this species in the Allegheny River while at Port Allegany, in McKean Co., in 1904, it was reported as occurring farther down stream. One from Lake Erie may have been from within our limits (Dr. Watson).

Esox masquinongy ohiensis (Kirtland). OHIO RIVER MUSK-ALLUNGE.—Reported to occur in the Allegheny as far as Corydon, Warren Co., and in New York to Olean. Warren Co. (Dr. J. H. Slack).

UMBRIDÆ

Umbra limi pygmæa (De Kay). MUD MINNOW.—Delaware River at Philadelphia and Holmesburg, Philadelphia Co.; Bristol and Tullytown, Bucks Co.; Schuylkill River (Dr. Harlan).

PÆCILIDÆ

Fundulus heteroclitus macrolepidotus (Walbaum). MUMMICHOG.—Delaware River in tide-water, at Tinicum, Delaware Co.; League Island, Tacony, Holmesburg, and Torresdale, Philadelphia Co.; Cornwells, Croydon, Bristol, Tullytown, and Morrisville, Bucks Co.

Fundulus diaphanus (Le Sueur). BARRED KILLIFISH.—Delaware River in tide-water and above, Brandywine basin in Chester Co. at Kennett Square; Brandywine at Chadds Ford, Darby and Ridley Creeks, Delaware Co.; Tacony Creek, Pennypack Creek at Holmesburg and Bustleton, Poquessing Creek at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill

Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Montgomery Co.; the Susquehanna basin at Paradise (J. S. Witmer) and Lancaster Co. (E. D. Cope); Warren County (Dr. J. H. Slack).

MASTACCEMBELIDÆ

Tylosurus marinus (Walbaum). GREEN GAR.—Delaware River (Dr. Uhler), at Bristol, Bucks Co.; Susquehanna River (E. D. Cope).

ATHERINIDÆ

Labidesthes sicculus (Cope). BROOK SILVERSIDE.—Youghiogeny River (E. D. Cope).

GASTEROSTERIDÆ

Eucalia inconstans (Kirtland). BROOK STICKLEBACK.—Erie, Erie Co.

Apeltes quadracus (Mitchill). FOUR-SPINED STICKLEBACK.—Delaware River, in tide-water, at Tinicum, Delaware Co.; Tacony, Holmesburg, and Torresdale, Philadelphia Co.; Cornwells, Croydon, Bristol, Tullytown, and Morrisville, Bucks Co.

APHREDODERIDÆ

Aphredoderus sayanus (Gilliams). PIRATE PERCH.—Delaware River at Tinicum, Delaware Co.; League Island, Tacony, Holmesburg, and Torresdale, Philadelphia Co.; Mill Creek and the river at Bristol, Bucks Co.

CENTRARCHIDÆ

Pomoxis annularis Rafinesque. CRAPPIE.—Kiskiminitas River (E. D. Cope). I have an example from the Delaware at Brownsville, Bucks Co. (J. G. Dillin).

Ambloplites rupestris (Rafinesque). ROCK BASS.—Beaver River (E. D. Cope), Warren Co. (Dr. J. H. Slack), and Kiskiminitas River (E. D. Cope).

Enneacanthus gloriosus (Hollbrook). BLUE-SPOTTED SUNFISH.— Delaware River at League Island (Professor Wm. M. Gabb), and Holmesburg, Philadelphia Co.; river and Mill Creek at Bristol, Bucks Co. In the Susquehanna from the Conestoga Creek, Lancaster Co.

Enneacanthus obesus (Girard). SPHAGNUM SUNFISH.—Found only in the ditches of the lower part of Philadelphia along the Delaware.

Mesogonistius chaetodon (Baird). BANDED SUNFISH.— Delaware River at Holmesburg, Philadelphia Co., and Bristol, Bucks Co.

Lepomis auritus (Linnæus). RED-BREASTED SUNFISH.— Delaware River basin in the Brandywine tributaries (Dr. H. Allen), Londongrove (E. D. Cope); Chadds Ford on the Brandywine, Darby, Ridley, and Cobb's Creeks, Delaware Co.; Montgomery Co. (W. Cassin), and Pennypack at Hatboro; Tacony Creek, Pennypack at Holmesburg and Bustleton, Poquessing at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls, and Newtown, Mill Creek at Bristol, Tullytown and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna basin from the Octoraro Creek (E. D. Cope) and Conestoga Creek, Lancaster Co. (E. D. Cope), and Paradise, Lancaster Co. (J. S. Witmer).

Lepomis megalotis (Rafinesque). LONG-EARED SUNFISH.— Kiskiminitas River (E. D. Cope).

Lepomis macrochirus Rafinesque. LARGE-FINNED SUNFISH.— Cotypes of *Lepomotis nephelus* Cope examined.

Lepomis palladus (Mitchill). BLUE-GILL SUNFISH.— Warren Co. (Dr. J. H. Slack); Kiskiminitas River (E. D. Cope).

Eupomotis gibbosus (Linnæus). COMMON SUNFISH.— Delaware River basin in tributaries of Brandywine near Kennett Square, Chester Co. (E. D. Cope and H. Allen); Brandywine at Chadds Ford, Ridley, Darby, and Cobb's Creek, and Tinicum, Delaware Co.; Jenkintown and Hatboro, Montgomery Co.; Tacony Creek, Pennypack Creek at Holmesburg and Bustleton, Poquessing at Torresdale and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls,

and Newtown, Bristol, and Mill Creek, Tullytown and Tullytown Creek, and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna from the Conestoga Creek, Lancaster Co. (E. D. Cope); the Loyalsock near Lopez, Sullivan Co.; Octoraro Creek (E. D. Cope). Erie, Erie Co. (C. Rutter).

Micropterus dolomieu Lacépède. SMALL-MOUTHED BASS.—Youghiogheny River (E. D. Cope) and the Allegheny at Corydon, Warren Co., and met with as far as Olean, N. Y.

Micropterus salmoides (Lacépède). LARGE-MOUTHED BASS.—Warren Co.

PERCIDÆ

Stizostedion vitreum salmoneum (Rafinesque). BLUE PIKE.—Warren Co. (Dr. J. H. Slack), Beaver River (E. D. Cope), and Youghiogheny River (E. D. Cope).

Stizostedion canadense griseum (De Kay). SAUGER.—Warren Co. (Dr. J. H. Slack), Beaver River (E. D. Cope), and Youghiogheny River (E. D. Cope).

Perca flavescens (Mitchill). YELLOW PERCH.—Delaware River in Darby Creek, Delaware Co.; river and Pennypack Creek at Holmesburg, and Poquessing Creek at Torresdale, Philadelphia Co.; Neshaminy Creek at Croydon, Hulmeville, Neshaminy Falls and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown and Morrisville, Bucks Co. In the Susquehanna basin from the Conestoga Creek in Lancaster Co. (E. D. Cope).

Percina caprodes (Rafinesque). LOG PERCH.—Type of *Perca nebulosa* Haldeman examined. Youghiogheny River (E. D. Cope) and Kiskiminitas River.

Hadropterus macrocephalus (Cope). LONG-HEADED DARTER.—Cotype of *Etheostoma macrocephalum* Cope examined.

Hadropterus peltatus (Cope). SHIELDED DARTER.—Type of *Etheostoma peltatum* Stauffer, in Cope, examined.

Diplesion blennioides (Rafinesque). GREEN-SIDED DARTER.—Beaver River (E. D. Cope).

Boleosoma nigrum (Rafinesque). JOHNNY DARTER.—Cotypes of *B. olmstedii brevipinnis* Cope examined.

Boleosoma nigrum olmstedii (Storer). TESSELLATED DARTER.—Delaware River basin in the Brandywine tributaries at Kennett

Square, Mendenhall and opposite Chadds Ford, Chester Co.; Brandywine at Chadds Ford, Ridley, Darby, and Cobb's Creek, and Tinicum, Delaware Co.; Pennypack at Hattboro, and Jenkintown, Montgomery Co.; League Island, Tacony Creek, Frankford Creek, Pennypack Creek at Holmesburg and Bustleton, and Poquessing Creek at Torresdale, and opposite Cornwells, Philadelphia Co.; Neshaminy Creek at Croydon, Newportville, Hulmeville, Neshaminy Falls, Frog Hollow, and Newtown, Mill Creek at Bristol, Tullytown Creek at Tullytown, and Morrisville, Bucks Co.; Dingmans Ferry, Pike Co. (H. T. Wolff). In the Susquehanna basin I have it from the Octoraro Creek at Nottingham in Chester Co., the Loyalsock near Lopez, Sullivan Co., and the Pequea at Paradise, Lancaster Co. (J. S. Witmer), besides the type of *Percina minima* Halde-
man. The accompanying figure represents a remarkable variation of

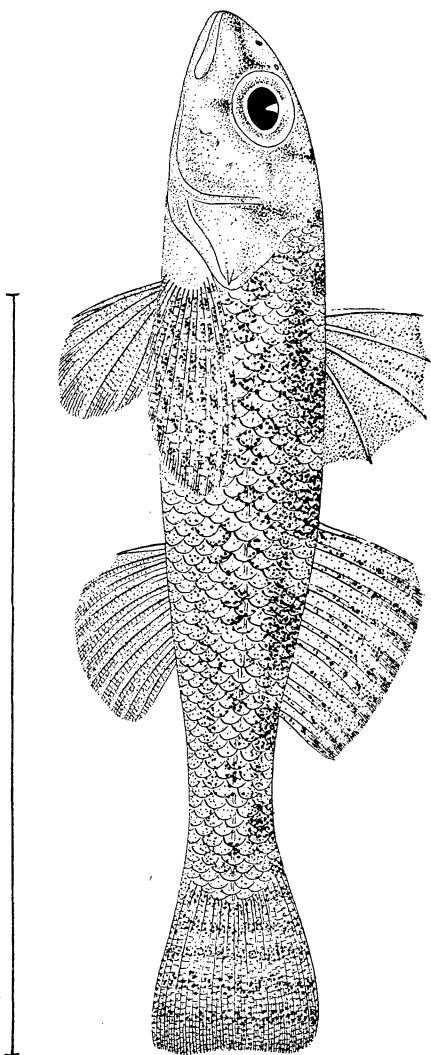


FIG. 1.—Variation of *Boleosoma nigrum olmstedii* (Storer).

fin-rays seen in an example I secured at Holmesburg, Philadelphia, September 11th, 1898. Although I have not seen the type of *Boleosoma asopus* Cope my Loyalsock examples go far to establish it as a pure synonym of this fish.

Etheostoma cæruleum Storer. BLUE DARTER.—Kiskiminitas River (E. D. Cope).

Etheostoma flabellare Rafinesque. FAN-TAILED DARTER.—Kiskiminitas River (E. D. Cope); Youghiogheny River (E. D. Cope); Pittsburgh (Jacob Green); Allegheny River at Port Allegany in McKean Co. during July and August of 1904 and June of 1906, where it is abundant.

Boleichthys fusiformis erochrous (Cope). SPHAGNUM DARTER.—Delaware basin in Mill Creek near Bristol, Bucks Co.

SERRANIDÆ

Roccus lineatus (Bloch). STRIPED BASS.—Delaware River basin at Tinicum, Delaware Co.; League Island, Tacony, Holmesburg, and Torresdale, Philadelphia Co.; Cornwells, Bristol, Tullytown, and Morrisville, Bucks Co. In the Susquehanna basin I have it from the Conestoga in Lancaster Co. (E. D. Cope).

Roccus chrysops (Rafinesque). WHITE BASS.—Reported from just below the headwaters of the Genesee in Potter Co. near Gold.

Morone americana (Gmelin). WHITE PERCH.—Delaware River at League Island, Tacony, Holmesburg, and Torresdale, Philadelphia Co., Cornwells, Bristol, Croydon, Tullytown, and Morrisville, Bucks Co.

SCIÆNIDÆ

Aplodinotus grunniens Rafinesque. FRESH-WATER DRUM.—One from Lake Erie (Dr. Watson) may have been taken in our limits.

COTTIDÆ

Uranidea gracilis viscosa (Haldeman). MILLER'S THUMB.—The Delaware basin in the Brandywine tributaries near West Chester, Chester Co.; in the Schuylkill basin near Port Kennedy, Montgomery Co. (D. McCadden), and Douglassville, Berks Co. (S. N. Rhoads); in the Neshaminy basin near New Britain, Bucks Co. (Dr. C. C. Abbott). In the Susquehanna basin in Spruce Creek, Huntingdon Co. In the Genesee basin at Gold, Potter Co., also other examples from the same County (E. Harris).

SOLEIDÆ

Achirus fasciatus Lacépède. SOLE.—Schuylkill River in the Delaware basin (Dr. Harlan) and Bristol, Bucks Co. (Dr. J. De B. Abbott).

GADIDÆ

Lota maculosa (Le Sueur). LING.—Erie, Erie Co.; Susquehanna basin at Muncy, Lycoming Co. (E. D. Cope).